



ChemCatalyst (Copy and answer these questions in your notebook)



- 1 Does the gold dust have the same properties as the gold bars? Explain.
- 2 Is there a point at which gold can be broken into particles so small that the particles do not retain the properties of gold?

The Big Question

- What happens to copper once it has been mixed with other substances?

G.) NaOH

11) H_2SO_4

Activity

Purpose: In this lesson you will complete a formal laboratory procedure. You will begin with copper powder and take it through a series of chemical steps, carefully observing and recording what happens at each stage. The goal is to figure out what happened to the original copper.

Setup and Safety Precautions:

This lab is safe, as long as each step is done carefully and correctly. Here are some safety guidelines.

- Everyone will wear safety goggles at all times.
- Be very careful handling the nitric acid, as it will burn any exposed skin. If some gets on your skin, wash the area immediately with water and inform your teacher.
- As you add the nitric acid to the copper, nitrogen dioxide, $\text{NO}_2(\text{g})$, a poisonous gas, will be produced. Be careful not to breathe this gas. Use the fume hood when you add the nitric acid to the copper.

- Always be careful when heating chemicals: they will burn exposed skin more quickly when hot. When using the hot plate, make sure to set it at a medium setting (e.g. setting 4 out of 10). Be especially careful not to splash when stirring the chemicals.

- Sulfuric acid is an extremely strong acid, although you are using it here in a fairly dilute (unconcentrated) form. If you get it on your skin, wash it off with plenty of water, and inform your teacher.

- What is the starting ingredient you will be using in this lab?

Copper

- Why must part of the lab be done in a fume hood?

bad gas

- When you filter, will you keep the solid or the liquid?

Solid

added
heated
filtered
mixed

What you added or did	What you observed
Got copper powder from teacher	shiny, orangish metal
add 2 mL of HNO_3 to copper	

Making Sense

Experimental stage	Observations
1. Copper at the start	
2. After adding nitric acid (HNO_3)	
3. After adding water (H_2O)	
4. After adding sodium hydroxide (NaOH)	
5. After heating	
6. After adding sulfuric acid (H_2SO_4)	
7. After adding zinc (Zn)	
8. Final	